APPLICATION FOR UNITED STATES LETTERS PATENT

FOR

Emoticon Input Method and Apparatus

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"Express Mail" label number <u>EL910784090US</u>

Emoticon Input Method and Apparatus

BACKGROUND OF THE INVENTION

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1.   Field of the Invention

The present invention relates to the field of textual or non-verbal communication. More specifically, the present invention relates to methods and apparatuses associated with the employment of emoticons in textual or non-verbal

10   communications, such as email or instant messaging, practiced on e.g. mobile communication devices, as in the case of wireless mobile telephones.

2.   Background Information

Advances in integrated circuit, microprocessor, networking and

15   telecommunication technologies have led to the development and wide spread adoption of networked computing devices and mobile communication devices. As a result, email, instant messaging, and wireless telephone calls have all become important vehicles of communication for a large segment of the population, if not the preferred forms of communication for these users.

20   It is known that for many users, their email and instant messaging communications (also referred to as textual or non-verbal communications) often involve the use of emoticons, such as the "smiling face" or the "sad face". However, few email or instant messaging applications offer any assistance to a user to enter and use emoticons in their communications. Some instant messaging applications

25   offer the minimal assistance of converting or replacing a handful of widely used emoticon forming sequences of characters to corresponding graphical symbols. For

example, when the characters ":" (colon), "=" (equal sign) and ")" (right parenthesis) are successively entered, some instant messaging applications automatically replace the entered characters with the graphical symbol "   ".

5   These prior art facilities suffer from a number of disadvantages. First, typically only a handful of these emoticon forming character sequences are supported. Thus, virtually no assistance is provided to a user who chooses to be creative, and uses an unconventional sequence of characters to form an emoticon, e.g. the character sequence of ":", "#" and "0" for a flabbergasted or astounded expression. Further, regardless whether the character sequence is conventional or

10   unconventional, a user typically has to enter the emoticon forming characters one at a time. This disadvantage is amplified in situations where the user is conducting the textual or non-verbal communication using a communication device having limited input facilities, such as wireless mobile phones.

    Accordingly, facilities that are more user friendly in assisting a user to employ

15   emoticons in their communications, especially on communication devices with limited input facilities, such as wireless mobile phones, are desired.

BRIEF DESCRIPTION OF DRAWINGS

The invention is illustrated by way of example and not by way of limitation in the figures of the accompanying drawings, in which like references indicate similar

5   elements and in which:

Figure 1 illustrates a wireless mobile phone incorporated with the teachings of the present invention for assisting a user in inputting an emoticon, in accordance with one embodiment;

Figure 2 illustrates a state of the wireless mobile phone of **FIG. 1**, where a list

10   of emoticons is displayed for user selection, responsive to an initial selection of an input key;

Figure 3 illustrates another state of the wireless mobile phone of **FIG. 1**, with the current focus being placed on one of the displayed emoticons, as directed by the user traversal actions on the displayed list;

15   **Figure 4** illustrates yet another state of the wireless mobile phone of **FIG. 1**, with a selected emoticon incorporated as part of a textual message being composed;

Figure 5 illustrates the relevant software elements of the wireless mobile phone of **Fig. 1**, for practicing the present invention, in accordance with one

20   embodiment;

Figure 6 illustrates the relevant hardware elements of the wireless mobile phone of **Fig. 1**, for practicing the present invention, in accordance with one embodiment;

Figure 7 illustrates the operational flow of the relevant aspect of the emoticon

25   input support logic provided in the key driver of **Fig. 5**, in accordance with one embodiment;

Figures 8a-8b illustrate alternate associations of the emoticon input logic to other input keys;

Figure 9 illustrates yet another alternate association of the emoticon input logic to other input keys, employing an additional key;

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Figure 10 illustrates yet another alternate association of the emoticon input logic to other input keys, employing a removal cover or skin; and

Figure 11 illustrates another mobile communication device incorporated with the teachings of the present invention, in accordance with another embodiment.

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DETAILED DESCRIPTION OF THE INVENTION

The present invention includes the provision of emoticon input logic to enhance the usability of a communication device. For ease of understanding, the

5   present invention will be primarily described in the context of wireless mobile phones. However, the present invention is not so limited. The present invention may also be practiced on other communication devices besides wireless mobile phones.

In the description to follow, various aspects of the present invention will be

10   described. For purposes of explanation, specific numbers, materials and configurations are set forth in order to provide a thorough understanding of the present invention. However, in selected instances, well-known features are omitted or simplified in order not to obscure the present invention. The present invention may be practiced with only some of the aspects described, and without some of the specific

15   details enumerated.

Various operations will be described as multiple discrete steps in turn, in a manner that is most helpful in understanding the present invention. However, the order of description should not be construed as to imply that these operations are necessarily order dependent. In particular, these operations need not be performed in

20   the order of presentation.

Parts of the description will be presented in terms of operations performed by a processor based device, using terms such as displaying, focusing, selecting, and the like, consistent with the manner commonly employed by those skilled in the art to convey the substance of their work to others skilled in the art. As well understood by

25   those skilled in the art, the quantities take the form of electrical, magnetic, or optical signals capable of being stored, transferred, combined, and otherwise manipulated

through mechanical, electrical and optical components of the processor based device. The term processor as used in this specification includes microprocessors, micro-controllers, digital signal processors, and the like, that are standalone, adjunct or embedded.

5   The description repeatedly uses the phrase "in one embodiment". Ordinarily the phrase does not refer to the same embodiment, although it may. The terms "comprising", "including", and "having" are frequently used in the specification and in the claims; the terms are synonymous.

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10   Overview

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Referring now to **Figure 1**, wherein a wireless mobile phone **100** incorporated with the teachings of the present invention, in accordance with one embodiment, is shown. As illustrated, for the embodiment, wireless mobile phone **100** comprises display **102** and input keys **104**, including in particular, input key **110**. Wireless mobile

15   phone **100** operates in at least two modes, a voice or verbal mode, and a text or non-verbal mode. Further, wireless mobile phone **100** is endowed with emotion input logic (not shown) to facilitate a user in inputting emoticons, e.g. for a text message during the text or non-verbal mode of operation. For the embodiment, the emoticon input logic is associated with input key **110**. That is, the emoticon input logic is activated by

20   input key **110**, e.g. while wireless mobile phone **100** operates in the text mode. As will be described in more detail below, using input key **110**, supported by the emoticon input logic, a user may enter an emoticon e.g. into a text message in a more user friendly manner.

Display **102** is provided to facilitate display of data, such as a textual message

25   received or being composed, status information, such as "calling ..." or "low battery", choice of applications, such as "calendar" or "phone book", choice of options, such as

"AM" or "PM" (when setting a system clock), and so forth. The term "text" and its related forms, such as "textual", as used in the present application, are synonymous with the term "non verbal". In other words, a "textual" message may comprise of characters from a standard character set as well as "special" characters, symbols,

5 glyphs, icons and the like.

Input keys **104** are provided to facilitate input of data, command, user responses and/or selections to phone **100**. For the embodiment, input keys **104** include control keys **106** and alphanumeric keys **108**; and as described earlier, the emoticon input logic is associated with input key **110** of alphanumeric keys **108**.

10 Control keys **106** may include "make call" or "end call" function keys, as well as "scrolling" keys to facilitate a user in directing scrolling direction, i.e. up, down, to the right or to the left, when scrolling through an enumerated list of options or choices. Alphanumeric keys **108**, for the embodiment, has a total of 12 alphanumeric keys, arranged in a 4x3 array configuration, that is 4 rows and 3 columns, with input key

15 **110** (associated with the emoticon input logic) disposed at the 4th row and 1st column position (with the row and column positions determined from top to bottom, and left to right respectively). Alphanumeric keys **108** are provided to facilitate input of alphanumeric data, including in particular, the input of emoticons through input key **110** (while phone **100** operates in the text mode).

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Operations

Figures **2-4** illustrate a contemplated usage of input key **110** and the associated emoticon input logic (while phone **100** operates in the text mode). More specifically, **Fig. 2-4** illustrate the external visible states of wireless mobile phone **100**

25 under the contemplated usage. As illustrated in **Fig. 2**, in response to an initial selection of input key **110** (while phone **100** is operating in the text mode, e.g. when a

textual message is being composed), a list of emoticons **112** is displayed on display **102** for user selection. More specifically, for the illustrated embodiment, a list of emoticon forming character sequences is displayed on display **102** for user selection. For example, the "smiling face" emotion is displayed by displaying the three character

5 sequence comprising the ":" (colon), the "-" (hyphen) and the ")" (right parenthesis) character. In alternate embodiments, singular graphical symbols, such as ☺, may be employed instead.

For the illustrated embodiment, emoticon forming character sequences **112** (hereinafter simply emoticons) are displayed in a left-to-right, then top-to-bottom

10 arrangement. In alternate embodiments, e.g. in support of other languages, such as Hebrew, Chinese and so forth, emoticons **112** may be displayed in a right-to-left, then top-to-bottom arrangement, a top-to-bottom then left-to-right arrangement, or a top-to-bottom then right-to-left arrangement.

For the illustrated embodiment, one of displayed emoticons **112** is also the

15 "current focus" emoticon. Initially, under the left-to-right then top-to-bottom display arrangement, the leftmost emoticon among the emoticons displayed in the top row is given the "current focus". In one embodiment, placing the "current focus" on a emoticon formed with a sequence of characters comprises highlighting all the characters. The term "highlighting" as used in the present application, including the

20 claims, includes all known techniques to cause a sequence of characters to be visually distinct from other neighboring sequences of character, to draw a user's attention to the "highlighted" sequence of characters. These known techniques include but are not limited to underlying, italicizing or employing bold faces for the sequence of characters.

25 As illustrated in **Fig. 3**, by selecting input key **110** again in a timely manner (thereby preventing an associated timer to expire), a user may scroll through the

displayed list of emoticons **112**. The emoticon having the "current focus" is updated correspondingly as the user scrolls through the list. In alternate embodiments, other approaches, such as using one or more of control keys **106**, may be practiced to facilitate scrolling through the displayed list of emoticons. In one embodiment,

5   scrolling through emoticons formed with character sequences comprises scrolling through the character sequences, i.e. moving from one character sequence to another character sequence.

As illustrated in **Fig. 4**, for the embodiment, upon elapse of a predetermined amount of time after the last selection of input key **110** (allowing the earlier

10   mentioned associated timer to expire), the emoticon of the "current focus" is selected, and inserted into e.g. text message **114** being composed. In alternate embodiments, selection of the "current focus" emoticon may be made in other manners, e.g. by "double clicking" input key **110** (i.e. successively clicking input key **110** at a predetermined "rapid" rate) or by selecting other input keys. Further, in

15   alternate usages, it is contemplated that the selected emoticon may be used in a standalone manner instead, e.g. transmitted to a recipient directly (without having incorporated into a textual message). In one embodiment, selecting emoticon (formed with a sequence of characters) with the "current focus" comprises selecting all the characters of the emoticon with the "current focus".

20   Note that upon selection, the characters of an emoticon forming character sequence (whether the sequence is being used in a standalone manner or as part of a text message) may be individually edited. For example, upon selection of the three character sequence ":", "-" and ")", one or more of the three characters ":", "-" and ")" may be individually edited, allowing a user to modify an emoticon to his/her

25   liking. The "-" character may be modified to "#", or the ")" character may be modified to "0", and so forth.

Software and Hardware

Figures 5-6 illustrate a software and a hardware component view of the relevant elements of wireless mobile phone **100**, in accordance with one embodiment. As illustrated in **Fig. 5**, the relevant software elements **500** of phone

5   **100** includes textual communication component **502** provided to facilitate textual communication, display driver **504** provided to facilitate rendering of display onto display **102**, and input driver **506** provided to support usage of input keys **104**. Input driver **506** is incorporated with the earlier described emoticon input logic to support the earlier described emoticon input process. As illustrated, input driver **506**

10   provides textual communication component **502** with the inputs received through input keys **104** (when textual communication component **502** is the "current" component having given control to receive the services of key driver **506**). In the case of input key **110**, while phone **100** is operating in the text mode, input driver **506** provides textual communication component **502** with the specific "selected"

15   emoticon, after having assisted the user in selecting one of the available emoticons.

Fig. 6 illustrates the relevant hardware components of wireless mobile phone **100** for practicing the present invention, in accordance with one embodiment. As illustrated, the relevant hardware components **600** include storage medium **604** and processor **602**. For the embodiment, the relevant hardware components **600** also

20   include general purpose input/output (GPIO) interface **606** and video controller **608**. The elements are coupled to each other via bus **610**.

Storage medium **604** is provided to store the programming instructions implementing key driver **506**. In one embodiment, storage medium **604** is a type of non-volatile memory, which is also employed to store the programming instructions

25   implementing display driver **504** and textual communication component **502**. Processor **602** coupled to storage medium **604** is provided to execute the

programming instructions implementing key driver **506**. In one embodiment, processor **602** is also employed to execute the programming instructions implementing display driver **504** and textual communication component **502**. GPIO **606** and video controller **608** are provided for coupling input keys **104** and display

5 **102** respectively.

Figure 7 illustrates the operational flow of the relevant aspects of key driver **506** in support of the earlier described emoticon input process. As illustrated, upon detecting the selection of key **110** while phone **100** is operating in the text mode, key driver **506** causes a list of emoticons **112** to be displayed for user selection, block

10 **702**. Upon displaying the list of emoticons **112**, key driver **506** further places a "current focus" on the "first" emoticon displayed, block **704**.

Thereafter, key driver **506** determines if a predetermined associated timer has expired, block **706**. If the associated timer has not expired, key driver **506** determines if another input key has been selected, block **707**. If another input key

15 has not been selected, key driver **506** determines if input key **110** is selected again, block **708**. The determinations of blocks **706-708** are repeated continuously, until eventually either input key **110** is re-selected before another input key is selected or the associated timer expires, or another input key is selected, or the associated timer expires.

20 If input key **110** is re-selected before another input key is selected or the associated timer expires, key driver **506** interprets the user action as a scrolling action, and updates the "current focus" to reflect the user's scrolling action correspondingly, block **710**. Further, key driver **506** resets the associated timer. For the embodiment, scrolling beyond the end of the list causes the "current focus" to be

25 placed back on the first emoticon. In other words, the user may scroll through the emoticons in a round-robin fashion, and return to select a "passed" emoticon. In

alternate embodiments, where control keys **106** are employed to facilitate scrolling, naturally, scrolling in either forward or backward direction may also be supported.

Eventually, either the user selects another input key, or after the user stops selecting input key **110** for the predetermined time period, the associated timer

5   expires. At such time, key driver **506** sets the emoticon having the "current focus" as the selected emoticon, and notifies textual communication **502** accordingly (which in the earlier described contemplated usage results in the selected emoticon being incorporated as part of the textual message being composed), block **712**.

As described earlier, the emoticons may be character sequences of multiple

10   characters or single pixel-map based graphical symbols. For emoticons implemented through character sequences, the individual characters of the selected character sequence become individually editable upon incorporation into a textual message. A single pixel-map based graphical symbol, upon selection, may of course nevertheless be deleted from the textual message.

15   Thus, it can be seen from the above description, usability of phone **100** is improved, with the advantageous provision of the emoticon input logic.

Alternate Embodiments

Figures 8a-8b illustrate a number of alternate embodiments for associating

20   the emoticon input logic of the present invention with input keys. As illustrated in **Fig. 8a**, in lieu of being associated with the "lower left corner" input key (which is often the "*" (asterisk) key when phone **100** is operating in the voice mode), emotion input logic may be associated with the "lower right corner" key (which is often the "#" (pound) key when phone **100** is operating in the voice mode) instead. Additionally,

25   as illustrated in **Fig. 8b**, in lieu of being associated with either the "*" or the "#" key,

emotion input logic may be associated with an actual "number" key instead, e.g. the number "5" key as shown, or other number keys, e.g. the "0" key.

Figure 9 illustrates yet another alternate embodiment for associating emoticon input logic with an input key. As illustrated, in lieu of being associated with one of the keys of the 12-key arrangement **108**, emoticon input logic may be associated with a dedicated function key that is in addition to the 12-key arrangement instead. Dedicated function key **110** is provided exclusively for the purpose of facilitating the earlier described emoticon input process.

Figure 10 illustrates yet another alternate embodiment for providing the emoticon input logic of the present invention, and associating the logic with an input key. As illustrated, in lieu of directly providing the emoticon input logic to phone **100**, and associating the logic with one of the keys of the 12-key arrangement **108**, emoticon input logic and its association with one of the input key **110** is indirectly implemented on a removable cover or skin **1000** having a storage medium **1010**, within which the enhanced key driver **506** is disposed. Additionally, storage medium **1010** may also include the input key association information.

As illustrated, cover or skin **1000** also includes a number of cutouts **1002-1004**to facilitate "mating" with wireless mobile phone **100**. Naturally, the sizes and shapes, as well as the precise placements of the cutouts are target device dependent. For the embodiment, wireless mobile phone **100** is designed to be able to receive removable cover or skin **1000**. Further, wireless mobile phone **110** is designed to be able to access storage medium **1010** for key driver **506** (and key association information if any). Thus, the usability of wireless mobile phone **100** may be "field" enhanced by having removable cover **1000** attached to it in the "field" (i.e. post initial sale).

Note that different collections of emoticons, and/or different input key associations may be provided to different families of removable covers **1000**.

Alternatively, in lieu of disposing the implementing programming instructions and input key association information in storage medium **1010**, some or all of the implementing programming instructions and association information may be replaced by a resource identifier (such as a URL) instead. The replacement resource identifier identifies a location where the replaced implementing programming instructions and input key association information may be retrieved.

Removable or interchangeable cover endowed with the capabilities to personalize or enhance the functionalities of a communication device is the subject matter of provisional application number <to be inserted>, entitled "Personalizing Electronic Devices and Smart Covering", filed on July 17, 2001. The specification of the provisional application is hereby fully incorporated by reference.

Figure11 illustrates another communication device incorporated with the teachings of the present invention. For the illustrated embodiment, communication device **1100** is a palm sized personal digital assistant equipped with email and/or instant messaging capability. Communication device **1100** is also equipped with display **1102**, input key **1110** and the complementary key driver logic as earlier described for wireless mobile phone **100**. Accordingly, it is readily apparent that the present invention may be practiced on a wide range of communication devices.

Conclusion and Epilogue

Thus, a novel emoticon input method and a number of apparatuses embodying the supporting logic for the method have been described. While the present invention has been described in terms of the above illustrated embodiments, those skilled in the art will recognize that the invention is not limited to the embodiments described. For

example, in selected embodiments, in lieu of presenting a plurality of emoticons for selection, the emoticons may be presented for selection one at a time, with each "single clicking" reselection of the input key causing another emoticon presented for selection and a "double clicking" reselection of the input key (or selection of another

5   input key or timeout) denoting selection of the displayed emoticon. Further, in others or the same selected embodiments, the list of emoticons available for selection may be user editable. That is, additional facilities (similar to e.g. name entries for an address book application) may be provided for a user to add to or subtract from a list of default emoticons provided by a vendor. Accordingly, the present invention can be

10   practiced with modification and alteration within the spirit and scope of the appended claims. The description is thus to be regarded as illustrative instead of restrictive on the present invention.

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